ABSTRACT

THESIS: Alkylations of 2-Amino-4H-Chromene-3-Carbonitriles

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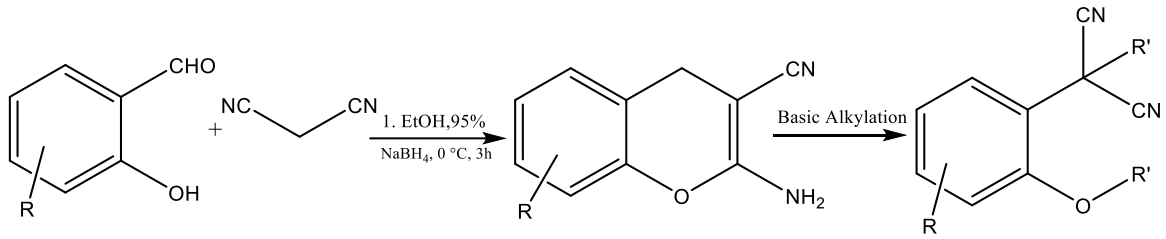

Malononitrile and its derivatives are essential components in the synthesis of many organic heterocycles that are utilized in agricultural products, such as pesticides, and in pharmaceutical chemicals. Recently, our laboratory has developed an efficient one-pot method to synthesize 2-amino-4H-chromene-3-carbonitrile derivatives from malononitrile and salicylaldehyde. In this method, 2-amino-4H-chromene-3-carbonitriles are created by reductive alkylation through a Knoevenagel condensation and cyclization, which is followed by subsequent conjugated reduction. The 2-amino-4H-chromene-3-carbonitrile derivatives can then undergo standard alkylation conditions, such as methyl or allyl, resulting in opening of the chromene heterocycle and formation of asymmetrically disubstituted malononitriles via slow C-alkylation which is followed by fast ring opining and O-alkylation.